

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	renew\$4 near10 (subset\$1 subnet\$1 subnetwork\$4) near10 (servic\$4 adj provider\$1 ISP) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 13:58
L2	1	renew\$4 near10 (subset\$1 subnet\$1 subnetwork\$4) near10 (servic\$4 adj provider\$1 ISP)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 13:58
L3	439	(subset\$1 subnet\$1 subnetwork\$4) near10 (servic\$4 adj provider\$1 ISP)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 13:58
L4	157	(subset\$1 subnet\$1 subnetwork\$4) near10 (servic\$4 adj provider\$1 ISP) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 13:59
L5	55	(subset\$1 subnet\$1 subnetwork\$4) near10 (servic\$4 adj provider\$1 ISP) and @ad<"20010216" and "709"/\$. ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 14:03
L6	18	"6415323"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 14:43
L7	0	edocsis	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 14:43
L8	11	european adj docsis	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 14:44
L9	34	eurodocsis	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:01

L10	7	select\$4 near10 ISP near10 DSL	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:17
L11	0	renew\$4 near10 subnet\$5 near10 ISP	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:42
L12	10	709/223-230.ccls. and 379/221.01-221.04.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:43
L13	1271	709/236-244.ccls. and (ISP servic\$4 near5 provid\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:44
L14	111	709/236-244.ccls. and (ISP servic\$4 near5 provid\$4) near10 select\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:44
L15	0	709/236-244.ccls. and (ISP servic\$4 near5 provid\$4) near10 select\$4 near10 GUI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 15:44
S1	10	"6487594"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:31
S2	8	"6332157"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/03 12:11
S3	4505	switch\$4 near10 (ISP servic\$4 near5 provider\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 14:30
S4	244	switch\$4 near10 (ISP servic\$4 near5 provider\$1) and 709/217-219,227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 14:31

S5	150	switch\$4 near10 (ISP servic\$4 near5 provider\$1) and 709/217-219,227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 14:31
S6	114	chang\$4 near10 (ISP servic\$4 near5 provider\$1) and 709/217-219,227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 14:32
S7	20	replac\$4 near10 (ISP servic\$4 near5 provider\$1) and 709/217-219,227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:44
S8	17	connect\$4 near10 "new" near10 (ISP servic\$4 near5 provider\$1) and 709/217-219,227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:10
S9	160	(chang\$4 switch\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4)and 709/217-219, 227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:12
S10	9	(remov\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4)and 709/217-219, 227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:23
S11	44	backup near10 servic\$4 near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4)and 709/217-219, 227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:23
S12	112	(backup second\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4)and 709/217-219, 227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:23
S13	754	(backup second\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4)and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:23

S14	56	(backup second\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 terminal\$1 network\$1 lan\$1 client\$4) and 709/227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 15:44
S16	7	(chang\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 client\$4) near10 (network\$4) and 709/227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:03
S17	19	(select\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 client\$4) near10 (network\$4) and 709/227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:10
S18	15	"6571290"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:03
S19	1	(remov\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (user\$1 client\$4) near10 (network\$4) and 709/227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:10
S20	3	(remov\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (network\$4) and 709/227-229.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:10
S21	42	(remov\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (network\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/28 16:12
S22	16	(delet\$4) near10 (ISP servic\$4 near5 provider\$1) near10 (network\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 07:59
S23	435	379/221.01-221.04.ccls. and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 07:59
S24	6	379/221.01-221.04.ccls. and @ad<"20010216" and remov\$4 near10 provid\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 08:01

S25	3	379/221.01-221.04.ccls. and @ad<"20010216" and 709/227-232.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 08:02
S26	45	migrat\$4 near10 (servic\$3 near3 provid\$3 ISP) near10 (client\$1 user\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 08:03
S27	19	migrat\$4 near10 (servic\$3 near3 provid\$3 ISP) near10 (client\$1 user\$1) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:44
S28	779	blumenthal.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:44
S29	3	blumenthal.in. and senator.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:46
S30	10	migrat\$4 near10 user\$4 near10 (ISP)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:47
S31	29	migrat\$4 near10 user\$4 near10 (servic\$4 near5 provid\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:50
S32	813	updat\$4 near10 (servic\$4 near5 provid\$4 ISP) near10 (client\$1 user\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:51
S33	497	updat\$4 near10 (servic\$4 near5 provid\$4 ISP) near10 (network\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:51
S34	142	S32 and S33	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:51

S35	56	S32 and S33 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 11:54
S36	2	wireless\$3 near10 (hotspot\$1 hot adj spot\$1) same (servic\$4 near10 provid\$4 ISP) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:01
S37	13	(hotspot\$1 hot adj spot\$1) same (servic\$4 near10 provid\$4 ISP) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:19
S38	11	"6386450"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:09
S39	7	"6418138"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:09
S40	0	(hotspot\$1 hot adj spot\$1) same (servic\$4 near10 provid\$4 ISP) near10 (select\$4 choos\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:19
S41	26	(hotspot\$1 hot adj spot\$1) and (servic\$4 near10 provid\$4 ISP) near10 (select\$4 choos\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:22
S42	1343	(user\$1 client\$1) near10 (servic\$4 near5 provid\$4 ISP) near10 (select\$4 choos\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:30
S43	0	(hotspot\$1 hot adj spot\$1) same (user\$1 client\$1) near10 (servic\$4 near5 provid\$4 ISP) near10 (select\$4 choos\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:27
S44	12	(hotspot\$1 hot adj spot\$1) and (user\$1 client\$1) near10 (servic\$4 near5 provid\$4 ISP) near10 (select\$4 choos\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:27

S45	7	(user\$1 client\$1) near10 (servic\$4 near5 provid\$4 ISP) near10 (select\$4 choos\$4) and open adj access and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:31
S46	60	remov\$4 near10 (servic\$4 near5 provid\$4 ISP) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:43
S47	4	"6516349"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:37
S48	10	remov\$4 near10 (ISP) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:45
S49	2	(hotspot\$1 hot adj spot\$1 wireless\$1) near10 provider\$1 near10 remov\$4 near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:47
S50	121	(hotspot\$1 hot adj spot\$1 wireless\$1) near10 remov\$4 near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:47
S51	12	(hotspot\$1 hot adj spot\$1) same (ISP servic\$4 near3 provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:49
S52	1676	select\$4 same (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:49
S53	109	select\$4 same (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216" and 709/227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:50
S54	45	select\$4 near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216" and 709/227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:50

S55	1	select\$4 near10 "new" near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216" and 709/227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:50
S56	7	select\$4 near10 "new" near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:51
S57	0	choos\$4 near10 "new" near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 12:52
S58	66	choos\$4 near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:08
S59	2	discontin\$6 near10 (ISP servic\$4 near3 provid\$4) near10 network\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:09
S60	64	discontin\$6 near10 (ISP servic\$4 near3 provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:09
S61	6	discontin\$6 near10 (ISP servic\$4 near3 provid\$4) and @ad<"20010216" and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:14
S62	31	stop\$5 near10 (ISP servic\$4 near3 provid\$4) and @ad<"20010216" and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:17
S63	22	(user\$1 client\$1) near10 connect\$4 near10 type\$1 near10 (updat\$4 chang\$4) and @ad<"20010216" and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:18
S64	593	chang\$4 near10 (ISP servic\$4 near3 provid\$4) near10 network\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:32

S65	4	roadrunner.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:36
S66	12333	connect\$4 near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:34
S67	5020	connect\$4 near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:34
S68	1323	connect\$4 near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216" and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:35
S69	354	connect\$4 near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216" and "709"/227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:35
S70	4	connect\$4 near10 "new" near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216" and "709"/227-229.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:35
S71	68	connect\$4 near10 "new" near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:39
S72	107	roadrunner	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:36
S73	6	roadrunner and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:36
S74	8	select\$3 near10 "new" near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:42

S75	0	choos\$3 near10 "new" near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:42
S76	85	choos\$3 near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:42
S77	0	choos\$3 near10 another near10 (ISP servic\$4 adj provid\$4) near10 (network\$1 internet) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:42
S78	1	bankrupt\$4 near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:46
S79	9	business\$4 near5 "out" near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:59
S80	1170	business\$4 near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:48
S81	18	remov\$4 near10 (ISP servic\$4 adj provid\$4) near10 select\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:50
S82	14	fail\$4 near10 (ISP servic\$4 adj provid\$4) near10 select\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 13:54
S83	30	business\$4 near10 (ISP servic\$4 adj provid\$4) near10 select\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 14:15
S84	130	request\$4 near10 new near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 14:20

S85	5	poll\$4 near10 (ISP servic\$4 adj provid\$4) near10 select\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 14:21
S86	19	poll\$4 near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216" and "709"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:00
S87	1	subnet\$4 near10 (ISP) near10 differ\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 14:56
S88	93	poll\$4 near10 (ISP servic\$4 adj provid\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:04
S89	18	poll\$4 near10 (ISP) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:04
S90	0	poll\$4 near10 (ISP) near10 choos\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:04
S91	9	poll\$4 near10 (ISP servic\$4 adj provid\$4) same (choos\$4 select\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:05
S92	208	current\$4 near10 (ISP servic\$4 adj provid\$4) same (choos\$4 select\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:06
S93	88	current\$4 near10 (ISP servic\$4 adj provid\$4) near10 (choos\$4 select\$4) and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/30 08:05
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S95	0	current\$4 near5 (ISP servic\$4 adj provid\$4) near10 (choos\$4 select\$4) near10 down\$4 and @ad<"20010216"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/29 15:07
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S98	1	"6249801".PN.	USPAT; USOCR	OR	OFF	2005/03/29 15:35
S99	1	"6185619".PN.	USPAT; USOCR	OR	OFF	2005/03/29 15:36
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Relevance scale ☐ ☐ ☐ ☐ ☐**1** [On inferring autonomous system relationships in the internet](#)

Lixin Gao

December 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 6Full text available:  [pdf\(241.72 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citing](#), [index terms](#)

The Internet consists of rapidly increasing number of hosts interconnected by constantly evolving networks of links and routers. Interdomain routing in the Internet is coordinated by the Border Gateway Protocol (BGP). BGP allows each autonomous system (AS) to choose its own administrative policy in selecting routes and propagating reachability information to others. These routing policies are constrained by the contractual commercial agreements between administrative domains. For example, an AS ...

Keywords: Border Gateway Protocol (BGP), Internet, protocols, routing**2** [Computer networks \(CN\): A framework for implicit and explicit service activation based on Service Level Specification](#)

Dimitrios Kagklis, Nicolas Liampotis, Christos Tsakiris

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**Full text available:  [pdf\(435.67 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#)

Internet Protocol-based applications are the prevailing trend of the telecommunications market, but the path towards the "IP over everything" target is not unhampered. The main shortcoming of the IP protocol is its incapability of providing guaranteed Quality of Service (QoS), although significant effort is spent within different standardization bodies and organizations. We propose architecture for the implicit and explicit service activation of Internet Services with guaranteed QoS, based on ex ...

Keywords: IP, QoS, SLA, SLS, service management, services, signaling**3** [The Satchel system architecture: mobile access to documents and services](#)

Mike Flynn, David Pendlebury, Chris Jones, Marge Eldridge, Mik Lamming

December 2000 **Mobile Networks and Applications**, Volume 5 Issue 4Full text available:  [pdf\(207.51 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citing](#), [index terms](#)

Mobile professionals require access to documents and document‐related services, such as printing, wherever they may be. They may also wish to give documents to colleagues electronically, as easily as with paper, face‐to‐face, and with similar security characteristics. The Satchel system provides such capabilities in the form of a mobile browser, implemented on a device that professional people would be likely to carry anyway, such as a pager or mobile phone. Printing may be per ...

4 WebViews: accessing personalized web content and services

Juliana Freire, Bharat Kumar, Daniel Lieuwen

April 2001 **Proceedings of the tenth international conference on World Wide Web**

Full text available:  [pdf\(305.83 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: Web clipping, content transcoding, dynamic content, electronic commerce, information delivery, personalization, smart bookmarks, voice interfaces, wrappers

5 Design and validation of QoS aware mobile internet access procedures for heterogeneous networks

Giuseppe Bianchi, Nicola Blefari-Melazzi, Pauline M. L. Chan, Matthias Holzbock, Y. Fun Hu, Axel Jahn, Ray E. Sheriff

February 2003 **Mobile Networks and Applications**, Volume 8 Issue 1

Full text available:  [pdf\(573.73 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, the requirements for personal environments mobility are addressed from terminal and network perspectives. Practical mobility and Quality of Service (QoS) aware solutions are proposed for a heterogeneous network, comprising of satellite and terrestrial access networks connected to an IP core network. The aim, in adopting a heterogeneous environment, is to provide global, seamless service coverage to a specific area, allowing access to services independently of location. An importan ...

Keywords: QoS, admission control, handover management, heterogeneous networks, laboratory demonstrator, mobile IP

6 MCTS customer task environment

R. R. Brown


October 1975 **ACM SIGOPS Operating Systems Review**, Volume 9 Issue 4

Full text available:  [pdf\(2.04 MB\)](#) Additional Information: [full citation](#), [references](#)

7 Competitive advantage on the World Wide Web: a webmaster's guide

Merrill E. Warkentin

October 1995 **ACM SIGAPP Applied Computing Review**, Volume 3 Issue 2

Full text available:  [pdf\(779.01 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

As the importance of the World Wide Web continues to grow, firms are seeking innovative ways to leverage the technology for competitive advantage. Firms are implementing web-based systems for internal and external information dissemination and for digital interactivity, including commerce. This paper highlights some of these uses of the web and addresses managerial and technical considerations when initiating a web site project, both on the server side and client side of the web. The focus is on ...

Keywords: digital commerce, internet security, intranet, web design, web server

8 The diffusion of the Internet in a pro-IT cultural environment: a content analysis of the Singapore experience

Margaret Tan, Thompson S. H. Teo

November 1999 **Communications of the AIS**

Full text available:  pdf(225.83 KB) Additional Information: [full citation](#), [references](#), [citations](#)

9 Military applications: Logistics: T.LoadS treatment of assigning and filling orders

Bob Hamber

December 2003 **Proceedings of the 35th conference on Winter simulation: driving innovation**

Full text available:  pdf(448.82 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

The Tactical Logistics Distribution System (T.LoadS or TLoaDS) is a powerful and flexible simulation application for assessing current or future tactical distribution systems. It is a discrete event analytical model for assessing the pros and cons of new doctrine, distribution techniques, organizational structures, and equipment concepts. It can also be used for mission planning allocating available resources to sustain a military force in a wide variety of scenarios. This paper covers how TL ...

10 Pricing differentiated services in the GPRS environment

Sergios Soursos, Costas Courcoubetis, George C. Polyzos

July 2003 **Wireless Networks**, Volume 9 Issue 4

Full text available:  pdf(916.31 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


The General Packet Radio Service extends the existing GSM mobile communications technology by providing packet switching and higher data rates in order to efficiently access IP-based services in the Internet. We adapt the Differentiated Services Quality-of-Service support framework and apply it over the GPRS air interface in order to provide various levels of service differentiation. We also focus on applying a charging technique so as to publish a unit price for each service class. These prices ...

Keywords: GPRS, QoS, congestion pricing, differentiated services, two-bit differentiation

11 Description and Analysis: Using web structure for classifying and describing web pages

Eric J. Glover, Kostas Tsioutsoulis, Steve Lawrence, David M. Pennock, Gary W. Flake

May 2002 **Proceedings of the eleventh international conference on World Wide Web**

Full text available:  pdf(136.12 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The structure of the web is increasingly being used to improve organization, search, and analysis of information on the web. For example, Google uses the text in citing documents (documents that link to the target document) for search. We analyze the relative utility of document text, and the text in citing documents near the citation, for classification and description. Results show that the text in citing documents, when available, often has greater discriminative and descriptive power than th ...

Keywords: SVM, anchortext, classification, cluster naming, entropy based feature extraction, evaluation, web directory, web structure

12 Communication privacy: How to achieve blocking resistance for existing systems enabling anonymous web surfing

Stefan Köpsell, Ulf Hillig

October 2004 **Proceedings of the 2004 ACM workshop on Privacy in the electronic society**

Full text available:  pdf(897.66 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We are developing a blocking resistant, practical and usable system for anonymous web surfing. This means, the system tries to provide as much reachability and availability as possible, even to users in countries where the free flow of information is legally, organizationally and physically restricted. The proposed solution is an add-on to existing anonymity systems. First we give a classification of blocking criteria and some general countermeasures. Using these techniques, we outline a conc ...

Keywords: AN.ON, JAP, Mix, blocking resistance

13 A cost and performance model for Web service investment

Kai R. T. Larsen, Peter A. Bloniarz


February 2000 **Communications of the ACM**, Volume 43 Issue 2

Full text available:  pdf(113.55 KB)  html(33.01 KB) Additional Information: [full citation](#), [references](#), [citing](#), [index terms](#)

14 Supporting real-time applications in an Integrated Services Packet Network: architecture and mechanism

David D. Clark, Scott Shenker, Lixia Zhang

October 1992 **ACM SIGCOMM Computer Communication Review , Conference proceedings on Communications architectures & protocols**, Volume 22 Issue 4

Full text available:  pdf(1.75 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citing](#), [index terms](#)

This paper considers the support of real-time applications in an Integrated Services Packet Network (ISPN). We first review the characteristics of real-time applications. We observe that, contrary to the popular view that real-time applications necessarily require a fixed delay bound, some real-time applications are more flexible and can adapt to current network conditions. We then propose an ISPN architecture that supports two distinct kinds of real-time service: g ...

15 Multilevel μ TESLA: Broadcast authentication for distributed sensor networks

Donggang Liu, Peng Ning

November 2004 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 3 Issue 4


Full text available:  pdf(410.86 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Broadcast authentication is a fundamental security service in distributed sensor networks. This paper presents the development of a scalable broadcast authentication scheme named μ TESLA based on μ TESLA, a broadcast authentication protocol whose scalability is limited by its unicast-based initial parameter distribution. Multilevel μ TESLA satisfies several nice properties, including low overhead, tolerance of message loss, scalability to large networks, and re ...

Keywords: Broadcast authentication, TESLA, sensor networks

16 Restoration by path concatenation: fast recovery of MPLS paths

Anat Bremler-Barr, Yehuda Afek, Haim Kaplan, Edith Cohen, Michael Merritt
 August 2001 **Proceedings of the twentieth annual ACM symposium on Principles of distributed computing**

Full text available:  pdf(830.71 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A new general theory about *restoration* of network paths is first introduced. The theory pertains to restoration of shortest paths in a network following failure, e.g., we prove that a shortest path in a network after removing k edges is the concatenation of at most $k + 1$ shortest paths in the original network.

The theory is then combined with efficient path concatenation techniques in MPLS (multi-protocol label switching), to achieve powerful schemes for restorati ...

17 Online multicast routing with bandwidth guarantees: a new approach using multicast network flow

Murali Kodialam, T. V. Lakshman, Sudipta Sengupta
 August 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 4

Full text available:  pdf(414.82 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents a new algorithm for online routing of bandwidth-guaranteed multicasts where routing requests arrive one by one without there being any *a priori* knowledge of future requests. A multicast routing request consists of a source s , a set of receivers R , and a bandwidth requirement b . This multicast routing problem arises in many contexts. Two applications of interest are routing of point-to-multipoint label-switched paths in multiprotocol label switched ...

Keywords: MPLS, multicast, quality-of-service (QoS), routing

18 Measurement: The impact of address allocation and routing on the structure and implementation of routing tables

Harsha Narayan, Ramesh Govindan, George Varghese
 August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**


Full text available:  pdf(148.92 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The recent growth in the size of the routing table has led to an interest in quantitatively understanding both the causes (eg multihoming) as well as the effects (eg impact on router lookup implementations) of such routing table growth. In this paper, we describe a new model called **ARAM** that defines the structure of routing tables of any given size. Unlike simpler empirical models that work backwards from effects (eg current prefix length distributions), **ARAM** a ...

Keywords: IP lookups, modeling, routing tables

19 WEST: a Web browser for small terminals

Staffan Björk, Lars Erik Holmquist, Johan Redström, Ivan Bretan, Rolf Danielsson, Jussi Karlgren, Kristofer Franzén
 November 1999 **Proceedings of the 12th annual ACM symposium on User interface software and technology**

Full text available:  pdf(173.07 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We describe WEST, a WEb browser for Small Terminals, that aims to solve some of the problems associated with accessing web pages on hand-held devices. Through a novel combination of text reduction and focus+context visualization, users can access web pages


from a very limited display environment, since the system will provide an overview of the contents of a web page even when it is too large to be displayed in its entirety. To make maximum use of the limited resources available on a typica ...

Keywords: WAP (wireless application protocol), flip zooming, focus+context visualization, hand-held devices, proxy systems, text reduction, web browser

20 Web mining for web personalization

Magdalini Eirinaki, Michalis Vazirgiannis

February 2003 **ACM Transactions on Internet Technology (TOIT)**, Volume 3 Issue 1

Full text available:  pdf(293.73 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Web personalization is the process of customizing a Web site to the needs of specific users, taking advantage of the knowledge acquired from the analysis of the user's navigational behavior (usage data) in correlation with other information collected in the Web context, namely, structure, content, and user profile data. Due to the explosive growth of the Web, the domain of Web personalization has gained great momentum both in the research and commercial areas. In this article we present a survey ...

Keywords: WWW, Web personalization, Web usage mining, user profiling

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1 [Design and validation of QoS aware mobile internet access procedures for heterogeneous networks](#)



Giuseppe Bianchi, Nicola Blefari-Melazzi, Pauline M. L. Chan, Matthias Holzbock, Y. Fun Hu, Axel Jahn, Ray E. Sheriff

February 2003 **Mobile Networks and Applications**, Volume 8 Issue 1Full text available: pdf(573.73 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, the requirements for personal environments mobility are addressed from terminal and network perspectives. Practical mobility and Quality of Service (QoS) aware solutions are proposed for a heterogeneous network, comprising of satellite and terrestrial access networks connected to an IP core network. The aim, in adopting a heterogeneous environment, is to provide global, seamless service coverage to a specific area, allowing access to services independently of location. An importan ...

Keywords: QoS, admission control, handover management, heterogeneous networks, laboratory demonstrator, mobile IP

2 [Supporting real-time applications in an Integrated Services Packet Network: architecture and mechanism](#)



David D. Clark, Scott Shenker, Lixia Zhang

October 1992 **ACM SIGCOMM Computer Communication Review , Conference proceedings on Communications architectures & protocols**, Volume 22 Issue 4Full text available: pdf(1.75 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper considers the support of real-time applications in an Integrated Services Packet Network (ISPN). We first review the characteristics of real-time applications. We observe that, contrary to the popular view that real-time applications necessarily require a fixed delay bound, some real-time applications are more flexible and can adapt to current network conditions. We then propose an ISPN architecture that supports two distinct kinds of real-time service: g ...

3 [Session 1: Failure to thrive: QoS and the culture of operational networking](#)



Gregory Bell

August 2003 **Proceedings of the ACM SIGCOMM workshop on Revisiting IP QoS: What have we learned, why do we care?**Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index](#)

Full text available:  [pdf\(338.39 KB\)](#)[terms](#)

Understanding the culture of operational networking can help to illuminate the question of why QoS has floundered. Network administrators have a well-founded aversion to complexity, in part because they experience failures attributable to design complexity on a regular basis. I argue that IP multicast defines a functional limit-case for deployable complexity in today's Internet. That limit is relevant to the deployment of QoS, since many flavors of QoS entail equal or greater complexity. The noti ...

Keywords: QoS, complexity, multicast, operational networking

4 Restoration by path concatenation: fast recovery of MPLS paths

Anat Bremler-Barr, Yehuda Afek, Haim Kaplan, Edith Cohen, Michael Merritt

August 2001 **Proceedings of the twentieth annual ACM symposium on Principles of distributed computing**

Full text available:  [pdf\(830.71 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

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The theory is then combined with efficient path concatenation techniques in MPLS (multi-protocol label switching), to achieve powerful schemes for restorati ...

5 Internet protocol version 6 (student paper)

Gregory R. Scholz, Clint Evans, Jaime Flores, Mustafa Rahman

March 2001 **Journal of Computing Sciences in Colleges**, Volume 16 Issue 3


Full text available:  [pdf\(72.22 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Many students, educators, and other professionals are increasingly finding that they need to become familiar with networking protocols. While the technical details are more complex than most professionals need, an understanding of the basic uses, features, terminology, and configurations is essential for any technical decision-maker or computer professional. Because of the Internet's dominance, computer professionals need to be, at least, familiar with its basic functionality. Currently, Inte ...

6 Fast address lookups using controlled prefix expansion

V. Srinivasan, G. Varghese

February 1999 **ACM Transactions on Computer Systems (TOCS)**, Volume 17 Issue 1

Full text available:  [pdf\(258.60 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Internet (IP) address lookup is a major bottleneck in high-performance routers. IP address lookup is challenging because it requires a longest matching prefix lookup. It is compounded by increasing routing table sizes, increased traffic, higher-speed links, and the migration to 128-bit IPv6 addresses. We describe how IP lookups and updates can be made faster using a set of transformation techniques. Our main technique, controlled prefix expansion, transf ...

Keywords: Internet address lookup, binary search on levels, controlled prefix expansion, expanded tries, longest-prefix match, multibit tries, router performance

7

Services: A mobility-aware broadcasting infrastructure for a wireless internet with

hotspots

Cristian Hesselman, Henk Eertink, Ing Widya, Erik Huizer

September 2003 **Proceedings of the 1st ACM international workshop on Wireless mobile applications and services on WLAN hotspots**

Full text available:  [pdf\(292.13 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we consider the problem of adaptively delivering live multimedia broadcasts (e.g., for applications such as TV, radio, or e-cinema) to a potentially large number of mobile hosts that roam about in a wireless internet with hotspots. We take a user-oriented approach based on an application-level delivery infrastructure consisting of and managed by (value-added) service providers. The service providers are mobility-aware and offer broadcasts in configurations that are optimized for w ...

Keywords: hotspots/overlays, mobility, multimedia broadcasting, negotiation

8 Survey of expert critiquing systems: practical and theoretical frontiers

Barry G. Silverman

April 1992 **Communications of the ACM**, Volume 35 Issue 4

Full text available:  [pdf\(2.84 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: critics, expert critiquing systems

9 Computer networks (CN): A framework for implicit and explicit service activation based on Service Level Specification

Dimitrios Kagklis, Nicolas Liampotis, Christos Tsakiris

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available:  [pdf\(435.67 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Internet Protocol-based applications are the prevailing trend of the telecommunications market, but the path towards the "IP over everything" target is not unhampered. The main shortcoming of the IP protocol is its incapability of providing guaranteed Quality of Service (QoS), although significant effort is spent within different standardization bodies and organizations. We propose architecture for the implicit and explicit service activation of Internet Services with guaranteed QoS, based on ex ...

Keywords: IP, QoS, SLA, SLS, service management, services, signaling

10 Mobile and multicast IP services in PACS: system architecture, prototype, and performance

Yongguang Zhang, Bo Ryu

January 2001 **Mobile Networks and Applications**, Volume 6 Issue 1

Full text available:  [pdf\(299.74 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: Mobile IP, PACS, cellular network, internet service, multicast

11 Protocol architectures: A framework for scalable global IP-anycast (GIA)

Dina Katabi, John Wroclawski

April 2001 **ACM SIGCOMM Computer Communication Review**, Volume 31 Issue 2 supplement

Full text available:  [pdf\(3.30 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper proposes GIA, a scalable architecture for global IP-anycast. Existing designs for providing IP-anycast must either globally distribute routes to individual anycast groups, or confine each anycast group to a pre-configured topological region. The first approach does not scale because of excessive growth in the routing tables, whereas the second one severely limits the utility of the service. Our design scales by dividing inter-domain anycast routing into two components. The first compo ...

Keywords: anycast, architecture, internet, routing, scalable

12 Security Mechanisms in High-Level Network Protocols

Victor L. Voydock, Stephen T. Kent

June 1983 **ACM Computing Surveys (CSUR)**, Volume 15 Issue 2


Full text available:  [pdf\(3.23 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#)



13 Denial-of-service: A framework for classifying denial of service attacks

Alefiya Hussain, John Heidemann, Christos Papadopoulos

August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**

Full text available:  [pdf\(622.14 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Launching a denial of service (DoS) attack is trivial, but detection and response is a painfully slow and often a manual process. Automatic classification of attacks as single- or multi-source can help focus a response, but current packet-header-based approaches are susceptible to spoofing. This paper introduces a framework for classifying DoS attacks based on header content, and novel techniques such as transient ramp-up behavior and spectral analysis. Although headers are easily forged, we sho ...


Keywords: denial of service attacks, measurement, security, time series analysis



14 Load-sensitive routing of long-lived IP flows

Anees Shaikh, Jennifer Rexford, Kang G. Shin

August 1999 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available:  [pdf\(1.57 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Internet service providers face a daunting challenge in provisioning network resources, due to the rapid growth of the Internet and wide fluctuations in the underlying traffic patterns. The ability of dynamic routing to circumvent congested links and improve application performance makes it a valuable traffic engineering tool. However, deployment of load-sensitive routing is hampered by the overheads imposed by link-state update propagation, path selection, and signaling. Under reasonable protoc ...



15 A framework for scalable global IP-anycast (GIA)

Dina Katabi, John Wroclawski

August 2000 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, Technologies, Architectures, and Protocols for Computer Communication**, Volume 30 Issue 4



Full text available:  [pdf\(306.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


This paper proposes GIA, a scalable architecture for global IP-anycast. Existing designs for providing IP-anycast must either globally distribute routes to individual anycast groups, or confine each anycast group to a pre-configured topological region. The first approach does not scale because of excessive growth in the routing tables, whereas the second one severely limits the utility of the service. Our design scales by dividing inter-domain anycast routing into two components. The first ...

Keywords: Internet, anycast, architecture, routing, scalable

16 Measuring ISP topologies with rocketfuel

Neil Spring, Ratul Mahajan, David Wetherall, Thomas Anderson

February 2004 **IEEE/ACM Transactions on Networking (TON)**, Volume 12 Issue 1

Full text available:  [pdf\(732.86 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

To date, realistic ISP topologies have not been accessible to the research community, leaving work that depends on topology on an uncertain footing. In this paper, we present new Internet mapping techniques that have enabled us to measure router-level ISP topologies. Our techniques reduce the number of required traces compared to a brute-force, all-to-all approach by three orders of magnitude without a significant loss in accuracy. They include the use of BGP routing tables to focus the measurement ...

Keywords: communication system operations and management, internet, measurement, network reliability

17 Protecting web servers from distributed denial of service attacks

Frank Kargl, Joern Maier, Michael Weber

April 2001 **Proceedings of the tenth international conference on World Wide Web**

Full text available:  [pdf\(390.23 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: DDoS, Linux, class based routing, distributed denial of service attacks, web server security

18 Detection: On scalable attack detection in the network

Ramana Rao Kompella, Sumeet Singh, George Varghese

October 2004 **Proceedings of the 4th ACM SIGCOMM conference on Internet measurement**


Full text available:  [pdf\(405.42 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Current intrusion detection and prevention systems seek to detect a wide class of network intrusions (e.g., DoS attacks, worms, port scans) at network vantage points. Unfortunately, all the IDS systems we know of keep per-connection or per-flow state. Thus it is hardly surprising that IDS systems (other than signature detection mechanisms) have not scaled to multi-gigabit speeds. By contrast, note that both router lookups and fair queuing have scaled to high speeds using <i>aggregation</i> ...

Keywords: denial of service, scalability, security

19 On inferring autonomous system relationships in the internet


Lixin Gao

December 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 6Full text available:  pdf(241.72 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The Internet consists of rapidly increasing number of hosts interconnected by constantly evolving networks of links and routers. Interdomain routing in the Internet is coordinated by the Border Gateway Protocol (BGP). BGP allows each autonomous system (AS) to choose its own administrative policy in selecting routes and propagating reachability information to others. These routing policies are constrained by the contractual commercial agreements between administrative domains. For example, an AS ...

Keywords: Border Gateway Protocol (BGP), Internet, protocols, routing**20** Datapac X.25 service characteristics

A. M. Rybczynski, D. F. Weir

September 1977 **Proceedings of the fifth symposium on Data communications**Full text available:  pdf(865.96 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Datapac is a nation-wide public packet switching data communications network operated by the Trans-Canada Telephone System. Datapac, as other networks being developed around the world, allows terminals to access its services by using a standard interface: CCITT Recommendation X.25. Recommendation X.25 defines a set of conventions governing the manner in which packet terminals format control information and data into packets, establish, maintain and clear calls, and manage the transmission a ...

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Relevance scale ☐ ☐ ☐ ☐ ☐**1 "Last-mile" bandwidth recap and committee survey activity**

Bob Ellis, Myles Losch, David Nelson, Laurie Reinhart

May 1999 **ACM SIGGRAPH Computer Graphics**, Volume 33 Issue 2Full text available: [pdf\(809.27 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

For people interested in graphics and graphical user interfaces, the greatest shortcoming of the Internet is bandwidth, particularly lines to consumer premises. Although most computing professionals have access to high bandwidth connections, most consumers do not. Consumer access to computing and the Internet is probably the most significant development in computing since 1980. This market now drives computing, and hence computer graphics, so it behooves all of us to understand the "last-mile" i ...

2 Congestion: Best-path vs. multi-path overlay routing

David G. Andersen, Alex C. Snoeren, Hari Balakrishnan

October 2003 **Proceedings of the 3rd ACM SIGCOMM conference on Internet measurement**Full text available: [pdf\(142.64 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Time-varying congestion on Internet paths and failures due to software, hardware, and configuration errors often disrupt packet delivery on the Internet. Many approaches to avoiding these problems use multiple paths between two network locations. These approaches rely on a path-independence assumption in order to work well; i.e., they work best when the problems on different paths between two locations are uncorrelated in time. This paper examines the extent to which this assumption holds on the In ...

Keywords: measurement, multi-path routing, networking, overlay networks**3 Getting in the Fast Lane**

Michael Hughes



June 1998 **Linux Journal**Full text available: [html\(20.87 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Here's how to set up a broadband connection for your home or office LAN

4 It's a Wi-Fi world

David Howard

September 2002 **netWorker**, Volume 6 Issue 3

Full text available:  [pdf\(236.63 KB\)](#)
 [html\(24.40 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

Wireless broadband may finally be ready for prime time

5 Electronic frontier: Bad moon rising

Brock N. Meeks

June 2000 **Communications of the ACM**, Volume 43 Issue 6

Full text available:  [pdf\(102.74 KB\)](#)
 [html\(11.75 KB\)](#)

Additional Information: [full citation](#), [index terms](#)

6 Advertising and Security for E-Commerce: Protecting electronic commerce from distributed denial-of-service attacks

José Brustoloni

May 2002 **Proceedings of the eleventh international conference on World Wide Web**

Full text available:  [pdf\(133.78 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

It is widely recognized that distributed denial-of-service (DDoS) attacks can disrupt electronic commerce and cause large revenue losses. However, effective defenses continue to be mostly unavailable. We describe and evaluate VIPnet, a novel value-added network service for protecting e-commerce and other transaction-based sites from DDoS attacks. In VIPnet, e-merchants pay Internet Service Providers (ISPs) to carry the packets of the e-merchants' best clients (called VIPs) in a privileged class ...

Keywords: denial of service, electronic commerce, quality of service

7 The role of service level agreements in the internet service provider industry

Fred Engel

September 1999 **International Journal of Network Management**, Volume 9 Issue 5

Full text available:  [pdf\(121.50 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

Service Level Agreements (SLAs) are becoming more commonplace, but there are areas of concern; this article assesses the pros and cons of SLAs in the ISP industry. Copyright © 2000 John Wiley & Sons, Ltd.

8 Computer networks (CN): A framework for implicit and explicit service activation based on Service Level Specification

Dimitrios Kagklis, Nicolas Liampotis, Christos Tsakiris

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available:  [pdf\(435.67 KB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#)

Internet Protocol-based applications are the prevailing trend of the telecommunications market, but the path towards the "IP over everything" target is not unhampered. The main shortcoming of the IP protocol is its incapability of providing guaranteed Quality of Service (QoS), although significant effort is spent within different standardization bodies and organizations. We propose architecture for the implicit and explicit service activation of Internet Services with guaranteed QoS, based on ex ...

Keywords: IP, QoS, SLA, SLS, service management, services, signaling

9 Choosing an Internet Service Provider ☐


Michael J. Johnson

April 1996 **Linux Journal**Full text available:  [html\(20.78 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

If you need to choose between a BBS, an on-line service, a shell account, and a PPP or SLIP account, read this informative article.

10 A practical method to counteract denial of service attacks ☐

Udaya Kiran Tupakula, Vijay Varadharajan

February 2003 **Proceedings of the twenty-sixth Australasian computer science conference on Conference in research and practice in information technology - Volume 16**Full text available:  [pdf\(58.71 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Today distributed denial of service (DDoS) attacks are causing major problems to conduct online business over the Internet. Recently several schemes have been proposed on how to prevent some of these attacks, but they suffer from a range of problems, some of them being impractical and others not being effective against these attacks. In this paper, we propose a Controller-Agent model that would greatly minimize DDoS attacks on Internet. With a new packet marking technique and agent design our sc ...


Keywords: DoS, broad attack signatures, controller-agent model, denial of service, packet marking

11 The value of a systematic approach to measurement and analysis: an ISP case study ☐

Srinivas Ramanathan, Edward H. Perry

May 1999 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1999 ACM SIGMETRICS international conference on Measurement and modeling of computer systems**, Volume 27 Issue 1Full text available:  [pdf\(260.65 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**12 Session 4: Internet service differentiation using transport options: the case for policy-aware congestion control** ☐

Panos Gevros

August 2003 **Proceedings of the ACM SIGCOMM workshop on Revisiting IP QoS: What have we learned, why do we care?**Full text available:  [pdf\(191.21 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

TCP congestion control played a key role in ensuring the stability and smooth operation of the network for many years. However, there are many cases in which current TCP congestion control may be overly conservative, leading to low transfer rates in networks which are practically congestion-free. This paper introduces Transport Options; a simple framework for Internet service differentiation based on different transmission control behaviours. It discusses how Transport Options can be implemented ...

13 Classroom discussions: policies and responsibilities of Internet Service Providers ☐

Mary J. Granger, Joyce Currie Little

June 2003 **ACM SIGCSE Bulletin , Proceedings of the 8th annual conference on Innovation and technology in computer science education**, Volume 35 Issue 3Full text available:  [pdf\(307.74 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Since the early to mid 1990s, with the advent of easy to use browser software, the Internet

has become available to those outside the community of researchers and knowledgeable users. Currently, anyone with computing and some type of networking capability is able to connect to the internet: some still through University and work-place links, others through internet Service Providers (ISPs). For their customers, these ISP provide an entry point into the Internet and may control or monitor activit ...

Keywords: ISPs, Internet Service Providers, intellectual property, privacy, security

14 Explicit allocation of best-effort packet delivery service ☐

David D. Clark, Wenjia Fang

August 1998 **IEEE/ACM Transactions on Networking (TON)**, Volume 6 Issue 4

Full text available:  [pdf\(208.85 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: Internet protocol, TCP, packet networks, quality of service, rate control

15 Linux in the Real World: The Rough and Tumble World of the Linux-based ISP ☐


May 1996 **Linux Journal**

Full text available:  [html\(26.74 KB\)](#) Additional Information: [full citation](#), [index terms](#)

16 Applications, services, and architecture: Smart edge server: beyond a wireless access point ☐

G. Manjunath, T. Simunic, V. Krishnan, J. Tourrilhes, D. Das, V. Srinivasamurthy, A. McReynolds

October 2004 **Proceedings of the 2nd ACM international workshop on Wireless mobile applications and services on WLAN hotspots**

Full text available:  [pdf\(410.68 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Wireless access at cafes, airports, homes and businesses have proliferated all over the globe with several different Wireless Internet Service Providers. Similarly, digital media has created a paradigm shift in media processing resulting in a complete change in media usage models, revamped existing businesses and has introduced new industry players. We believe there is a tremendous opportunity for application and system services at the intersection of the above two domains for exploiting the ...

Keywords: access point, low-power, management, media, security, wireless

17 Enabling full service surrogates using the portable channel representation ☐

Micah Beck, Terry Moore, Leif Abrahamsson, Christophe Achouiantz, Patrick Johansson

April 2001 **Proceedings of the tenth international conference on World Wide Web**

Full text available:  [pdf\(282.92 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: content distribution, dynamic content, mirroring, portability, replication, surrogate, web server

18 ☐

Services: A mobility-aware broadcasting infrastructure for a wireless internet with hotspots

Cristian Hesselman, Henk Eertink, Ing Widya, Erik Huizer

September 2003 **Proceedings of the 1st ACM international workshop on Wireless mobile applications and services on WLAN hotspots**

Full text available:  pdf(292.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we consider the problem of adaptively delivering live multimedia broadcasts (e.g., for applications such as TV, radio, or e-cinema) to a potentially large number of mobile hosts that roam about in a wireless internet with hotspots. We take a user-oriented approach based on an application-level delivery infrastructure consisting of and managed by (value-added) service providers. The service providers are mobility-aware and offer broadcasts in configurations that are optimized for w ...

Keywords: hotspots/overlays, mobility, multimedia broadcasting, negotiation

19 Risk analysis: Asset price modeling: a spot pricing framework to enable pricing and risk management of inter-domain assured bandwidth services ☐

Mehdi Aboulfadl, Aparna Gupta, Ritesh Pradhan, Shivkumar Kalyanaraman

December 2002 **Proceedings of the 34th conference on Winter simulation: exploring new frontiers**

Full text available:  pdf(230.48 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

In the current bandwidth market, Internet Service Providers (ISPs) provide guaranteed Internet bandwidth within their domains. However, they are incapable of providing such assurances for data crossing their domain boundaries. In this paper, we present a spot pricing scheme for Internet bandwidth contracts within an ISP domain. These models when implemented at access or exchange points of different ISP domains would provide assured bandwidth for interdomain traffic. Each contract will constit ...

20 Differentiated end-to-end Internet services using a weighted proportional fair sharing TCP ☐

Jon Crowcroft, Philippe Oechslin

July 1998 **ACM SIGCOMM Computer Communication Review**, Volume 28 Issue 3

Full text available:  pdf(872.28 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

In this document we study the application of weighted proportional fairness to data flows in the Internet. We let the users set the weights of their connections in order to maximise the utility they get from the network. When combined with a pricing scheme where connections are billed by weight and time, such a system is known to maximise the total utility of the network. Our study case is a national Web cache server connected to long distance links. We propose two ways of weighting TCP connecti ...

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